Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project title	*Conservation of the orang-utan in Kinabatangan Wildlife Sanctuary, Sabah, Malaysia*
Country(ies)	*Sabah, Malaysia*
Contractor	*Cardiff University*
Project Reference No.	*08/044*
Grant Value	*£147,264*
Start/Finishing dates	*01/12/2000-30/11/2003*
Reporting period	*1.4.2001 to 31.3.2002*

2. Project Background

- Briefly describe the location and circumstances of the project and the problem that the project aims to tackle.

The recent technical developments in genetics and the use of non-invasive methods give conservation professionals powerful tools for the long-term management of wildlife populations. The orangutan is a flagship species for wildlife conservation in Malaysia. One of the main orangutan populations in Malaysia is found in the forests of the Lower Kinabatangan region, Sabah. These forests are now gazetted as a Wildlife Sanctuary because of their unique wildlife diversity and abundance. However, although the aim of the Sanctuary is to create a corridor for wildlife along the Kinabatangan floodplain, these forests are currently fragmented. It is not known whether the impact of habitat fragmentation on isolated orangutan subpopulations could jeopardise their long-term survival. The current ecological and behavioural observations and the surveys undertaken by the Kinabatangan Orangutan Conservation Project (KOCP, Drs Isabelle Lackman-Ancrenaz and Marc Ancrenaz, Directors) through different areas in the Lower Kinabatangan have shown an unusually high density of orangutans in small fragmented areas. The high density is possibly due to recent habitat loss and consecutive concentration in the remaining forests. In these degraded forests, distribution in space and in time of orangutan food sources greatly differs from primary forests and is often much more abundant: these forests are thus able to sustain greater densities of apes. These factors will likely affect orangutan seasonal movements, territory ranges and therefore will impact the social and structure organisations.

The present project aims at providing a range of essential information on the genetic structure of the Kinabatangan orangutan population (e.g. genetic variability, gene flow between subpopulations, effective population size, and patterns of dispersal). The results will greatly contribute towards a realistic assessment of the current conservation status of the Kinabatangan orangutan population. This will therefore provide crucial tools for the development of adapted practical management measures to ensure the maintenance of a healthy genetic diversity within this population over a long period of time.

3. Project Objectives

- State the purpose and objectives (or purpose and outputs) of the project. Please include the Logical Framework for this project (as an appendix) if this formed part of the original proposal or has been developed since, and report against this.

a) to establish a high quality long-term research programme at the University of Malaysia-Sabah in tropical biology and biodiversity conservation using non-invasive population genetic techniques;

b) *to establish a university teaching programme in conservation science through which candidates for further training can be identified, and through which increased national awareness of conservation issues can be raised;*

c) *to establish population genetic methodology that will be applicable to endangered rainforest species;*

d) *to investigate the genetic consequences of recent demographic changes brought about due to human pressure, habitat disturbance, population fragmentation and high density.*

- Have the objectives or proposed operational plan been modified over the last year and have these changes been approved by the Darwin Secretariat?

The objectives or proposed operational plan have not been modified over the last year.

4. Progress

- Please provide a brief history of the project to the beginning of this reporting period. (1 para.)

May 27, 2001	*Benoît Goossens (BG) returns to United Kingdom with Mr Mohammad Fairus Bin Jalil (MFBJ), UMS staff (Kota Kinabalu-Kuala Lumpur-London-Cardiff)*
June-Nov, 2001	*MFBJ is trained by BG in molecular techniques applied to conservation of the orangutan in the Kinabatangan Wildlife Sanctuary (KWS)*
June, 2001	*BG and MFBJ extract DNA from 178 orangutan shed hair samples collected in the KWS*
July-Sept, 2001	*BG and MFBJ extract DNA from 103 orangutan faecal samples collected in the KWS. Extractions performed at the Institute of Zoology, ZSL, London*
September 1-5, 2001	*Marc Ancrenaz (MA) visits Cardiff, to meet with Michael W. Bruford (MWB), MFBJ and BG to organise the International Conservation Biology Course, to be held at UMS, Sabah in 2002*
September 24, 2001	*Darwin Initiative Workshop in University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia, presentation of a poster: "Non-invasive sampling of orang-utan hair and faeces in the Kinabatangan Wildlife Sanctuary, Sabah, Malaysia", Goossens B, Zulkifli A, Jalil MF, Lackman-Ancrenaz I, Ancrenaz M, Mohamed M, Andau P, Bruford MW*
Oct 2001-Jan 2002	*BG and MFBJ (until Nov 2001) amplify and genotype 257 extracted samples of orangutan DNA for 14 microsatellite loci.*
Nov 28, 2001	*MFBJ returns to Malaysia*
Feb 1-10, 2002	*BG analyses results of DNA genotyping at Cardiff University*
Feb 12, 2002	*BG returns to Sabah*
Feb 15-April 6, 2002	*BG prepares the International Conservation Biology Course, and the Kinabatangan Scientific Expedition 2002, in collaboration with MFBJ*
April 7, 2002	*MWB arrives in Kota Kinabalu*
April 9-12, 2002	*MWB (together with BG) visits the Kinabatangan Orangutan Conservation Project, in Sukau, Kinabatangan Wildlife Sanctuary*
April 15-May 3, 2002	*International Conservation Biology Course 2002, lectures*
April 27, 2002	*Field training in Gaya Island (collection of long-tailed macaque's faecal samples)*
	MWB returns to UK
May 2, 2002	*Sabah Wildlife Department lectures*
May 4-19, 2002	*Kinabatangan Scientific Expedition 2002, co-organised by Cardiff University (Darwin Initiative), UMS, SWD and Japanese International Cooperation Agency (JICA)*
May 6-11, 2002	*Primate boat survey in the Kinabatangan floodplain with the students, led by BG*
May 12-15, 2002	*Orangutan census in the KOCP study site with the students, led by KOCP staff*
May 16-18, 2002	*Gibbon census in the KOCP study site with the students, led by MA*

May 19, 2002 *BG and students return to Kota Kinabalu*

May 20-24, 2002 Course assessment

May 24, 2002 *Closing ceremony and certificate distribution for International Conservation Biology Course 2002*

May 25-June 6, 2002 *BG in Kota Kinabalu, writing 2nd year report and papers*

- Summarise progress over the last year against the agreed baseline timetable for the period. Explain differences including any slippage or additional outputs and activities.

The 12 last months of the project (June 2001-May 2002) have been really successful. The main objective for this period was to get genetic information from the 257 different samples (shed hair in nests and faeces) collected between Dec 2000 and May 2001 in the 10 Lots of the Kinabatangan Wildlife Sanctuary. DNA has been successfully amplified for 14 microsatellite loci, for 201 (78%) of the samples (an extremely high percentage for such studies). The sampling identified 200 genetically different individuals. Analysis of the results for the separate lots of the Sanctuary, and the writing of articles is currently underway.

The second main objective was to train a UMS staff member, MFBJ, in molecular techniques applied to conservation of endangered species, in this case the orangutan. MFBJ spent six months in Cardiff University, together with BG and received training on faecal and shed hair DNA extraction techniques, PCR amplification techniques, microsatellite genotyping techniques, and data analysis. MFBJ has increased his knowledge in conservation genetics science and he will ensure the future viability of laboratory techniques in the ITBC genetic lab at UMS.

The third objective was to establish a university teaching programme in conservation science at UMS, in order to raise awareness of conservation issues. This course provided a useful opportunity for all involved or interested in biodiversity conservation to gain up-to-date knowledge and foster strategic contacts. The International Conservation Biology Course (organised by BG) took place between the 15th of April and the 25th of May, at the Institute for Tropical Biology and Conservation (ITBC), UMS. Thirty-three participants from different agencies (UMS, Sabah Wildlife Department, Sabah Parks, Sabah Forestry Department, Sabah NGOs (KOCP), Indonesian participants) attended the 6 week course. The six weeks were broken down into 3 weeks lectures, 2 weeks field training and one week of assessment. At the end of the course a certificate was given to those participants who attended the course and the expedition in the Kinabatangan, and passed the assessment procedure.

- Provide an account of the project's research, training, and/or technical work during the last year. This should include discussion on selection criteria for participants, research and training methodologies as well as results. Please **summarise** techniques and results and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications)

<u>Research</u>

The main research objective of the project has been successfully achieved between June 2001 and February 2002. The set of samples collected and brought back in UK by BG has been analysed in the laboratory. Two hundred orangutans have been identified genetically in the Kinabatangan Wildlife Sanctuary, representing about 20% of the total population (1,000 individuals, KOCP unpublished data).

DNA was extracted from shed hair using a buffer method adapted in our laboratory.

Faecal extractions were carried out in a Class I microbiological safety hood, using the QIAamp® DNA Stool Mini Kit and following a specific protocol for orangutans detailed in Goossens et al. 2000 and Utami et al. 2002. Fourteen human-derived microsatellite loci were amplified: 2 dinucleotide loci and 12 tetranucleotide loci. A multiple-tube procedure was conducted for each faecal extract for which three amplifications were performed using the locus D5S1457 according to Goossens et al. 2000. After that, the most successful extract (3 positive PCRs) for each sample was amplified seven times for each locus to avoid typing errors. Genetic diversity were measured as the mean number of alleles per locus, observed (Ho) and expected (HE) heterozygosities. Two softwares were used (Partition and Genetix) to analyse patterns of genetic differentiation between the two sides of the Kinabatangan river and between the fragmented lots of the Kinabatangan Wildlife Sanctuary. A paper is in preparation for Molecular Ecology.

Training

BG's Malaysian counterpart, MFBJ from ITBC, UMS has been trained in molecular ecology techniques in Cardiff University for six months. He worked with BG in the laboratory, extracting DNA from faecal samples and from shed hair samples previously collected in the field; amplifying nuclear markers and genotyping orangutan individuals. He also spent time in the library, increasing his knowledge of both population genetics and conservation biology.

Back in Malaysia, MFBJ is now in charge of the non-invasive genetic lab. His work, and the experience he acquired in Cardiff with BG has resulted in a successful application for a PhD scholarship from UMS. He will prepare his PhD, part time at Cardiff University and at UMS, under the supervision of BG and MWB. The project title is "Comparative phylogeography and genetic differentiation of three primate species found in Kinabatangan Wildlife Sanctuary, Sabah, Malaysia".

During the Kinabatangan Scientific Expedition 2002, 25 course participants were trained in primate and crocodile census techniques, *non-invasive genetic sampling, data collection for invertebrate, amphibian, reptile, bird and small mammal biodiversity studies, ethnobotanical surveys, and eco-tourism activities. Results of the KSE 2002 will be published in a book by Universiti Malaysia Sabah in collaboration with CU, KOCP, SWD and JICA. Results of the primate census will be published in the journal Folia Primatologica.*

KOCP research assistants have been trained by BG in DNA sampling collection of endangered species such as Asian elephants, orangutans, Proboscis monkey, pig-tailed macaques.

Jamil Sinyor, one of KOCP research assistants, has been trained by BG in writing papers and he will present an oral communication at the XIXth International Primatological Society Conference, held in Beijing, 4-9 August, 2002.

Teaching

An International Conservation Biology Course was organised by BG at ITBC, UMS. Subjects covered during the course included: What is conservation biology?; Systematics, taxonomy and phylogeny; Biogeography and island biogeography; The extinction crisis and threats to biological diversity; Behavioural ecology and conservation; Genetic diversity in populations; Non-invasive genetics and conservation; Population demography and viability, population and habitat viability analysis; Conservation management; Ecological research techniques in conservation; Human genetics and human colonisation; The concept of phylogeography; and Wildlife conservation in Sabah. The course was divided into three periods: three weeks at ITBC, two weeks of fieldwork in the Kinabatangan floodplain, and one week of report-writing and assessment at ITBC. The three first weeks were devoted to lectures, seminars, practicals, wildlife films, fieldwork (on Gaya Island) and discussion of scientific papers. During weeks 4 and 5, the participants took part in a comprehensive expedition to the Kinabatangan floodplain co-organised by UMS, CU, KOCP, SWD and JICA. Week 6 was spent at ITBC for course assessment. Assessment was based on three equal contributions: ***1/3 for the preparation and submission of a report on the field expedition, 1/3 for presenting a summary of a scientific paper to the other course participants, and 1/3 for participation in a workshop entitled "Application of genetics to the conservation of endangered species in Sabah". At the end of the course a certificate of completion was given to those participants who attended the course, the expedition and passed the assessment procedure. All participants that attended at least 70% of the lectures during the three first weeks received an certificate of attendance to that effect. Of 33 participants, 17 received a certificate of completion. Most of these were staff from governmental and non-governmental agencies, showing their great motivation and the wish to increase their knowledge in conservation biology. Sixteen participants received a certificate of attendance. The course was taught by researchers involved in the Darwin project (Dr Benoît Goossens, organiser, CU and UMS; Prof Michael W. Bruford, CU; Dr Marc Ancrenaz and Mr Sahdin Lias, KOCP); staff at the ITBC (Dr Menno Schilthuizen), guest lecturers (Dr Joanna M. Setchell, University Surrey-Roehampton; Dr Lounès Chikhi, University College London), and guest from Sabah agencies (Mr Mahedi Andau, Director Sabah Wildlife Department; Mr Augustine Tuuga, Senior Wildlife Officer, SWD; Mr Peter Malim, Senior Wildlife Officer, SWD; Mrs Anna Wong, Senior Officer, SWD; Mr Soren M. Jensen, Chief Technical Adviser, Danish Cooperation for Environment and Development, SWD; Ms Lee Shan Khee, WWF Malaysia).***

Capacity building

Two of the objectives of the project are the setting up of a non-invasive genetic lab at ITBC, UMS, and the establishment of a population genetic methodology that will be applicable to endangered rainforest species. Both objectives are now in sight: the genetic lab is almost set up and is already used, waiting only for the ABI 3100 sequencer to be installed in the lab at the end of June 2002; and BG has also established a long-term genetic project on Asian elephant in Sabah, using the same methodology developed for the orangutans. This study will be done at UMS, in collaboration with the Sabah Wildlife Department, KOCP and Cardiff University.

- Discuss any significant difficulties encountered during the year.

No difficulties were encountered during the year. The extraction and amplification of the samples collected in the Kinabatangan Wildlife Sanctuary have been really successful. The International Conservation Biology Course 2002 was very well received by the participants, particularly by the governmental agencies (Sabah Wildlife Department, Sabah Forestry Department, Sabah Parks). We want to include more teaching by UMS staff next year.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategies?

The design of the project has not been enhanced at this early stage of the project, but nevertheless, the genetic sampling has been so good that we will be able to publish already.

- Present a timetable (workplan) for the next reporting period.

06/2002-06/2003	*Field expeditions in Sabah to collect orang-utan samples in different populations of the state undertaken by Benoît Goossens (June and July 2002), Marc Ancrenaz (KOCP) and the Sabah Wildlife Department*
04-09/08/2002	*BG, MFBJ and Jamil Sinyor (KOCP) attend the XIXth International Primatological Society Conference in Beijing, China (the conference fees for these three people are covered by Darwin Initiative). Three oral communications will be presented.*
25/08/2002	*BG returns to UK*
09-12/2002	*Mitochondrial DNA analysis and sexing of the orangutans from the KWS, in Cardiff University, UK*
	DNA extraction from the samples collected in Sabah by MFBJ in UMS, Malaysia
01-03/2003	*Ms Sheena James (UMS Msc student) will join BG in Cardiff University to be trained in molecular techniques. They will work on the orangutan samples collected in the KOCP study site to study the orangutan mating strategies in degraded forests.*
04/2003	*BG will return to Sabah for 7 months to run the International Conservation Biology Course 2003, set up the non-invasive genetic lab, implement the population genetic methodology applicable to endangered rainforest species, and organise an International Workshop on Orangutan Conservation in Kota Kinabalu, at the end of the Darwin project (September 2003)*

5. Partnerships

- Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?

Relationships between BG and the host country partners (University Malaysia Sabah, Sabah Wildlife Department, and Kinabatangan Orangutan Conservation Project) were again extremely good.

The Universiti Malaysia Sabah provided BG with an office at the new Institute for Tropical Biology and Conservation, email and internet access and all facilities necessary to organise the International Conservation Biology Course 2002.

The Sabah Wildlife Department has been very supportive and gave all the authorisations required to sample in the Kinabatangan Wildlife Sanctuary and in the adjacent Forest Reserves as well as in the whole state of Sabah. They also provide an export permit for the samples (shed hair and faeces). The Sabah Wildlife Department is looking forward to the genetic results to incorporate them in their management plan of the Kinabatangan Wildlife Sanctuary. SWD also sent four participants (Mr Abdul Karim Hj. Dakog and Mr Sailun Hj. Aris, Senior Wildlife Officers, Mrs Anna Wong, Wildlife Officer, and Dr Nathan Sen , Director of the Sepilok Orangutan Rehabilitation Centre) to the International Conservation Biology Course 2002 held at UMS.

The Kinabatangan Orangutan Conservation Project provided BG with accommodation at their research station during his stay in Sukau village. The KOCP research station was also used as a base camp for the Kinabatangan Scientific Expedition 2002. KOCP also provided several research assistants who took part in the expedition. Their experience in the field greatly facilitated the work of the scientists. KOCP also sent four participants (Mr Datu Mohd. Ahbam Abulani, Mr Jamil Sinyor, Mr Sahdin Lias, and Mr Azrie Sawang). KOCP research assistants carried on the orangutan faecal sampling throughout the year in their study site for the mating strategies part of the project.

Sabah Parks (Mr Maklarin Hj. Lakin) and Sabah Forestry Department (Mr Pilis Malim) also sent a participant each to the International Conservation Biology Course 2002 at UMS. Mr Maklarin Hj. Lakin is currently preparing a Master's thesis entitled "An ecological study of sympatric langur (Presbytis sp.) and macaques (Macaca sp.) in Tawau Hills Park, Sabah, Malaysia". Having learnt techniques during the course and expedition, MHL will now collect non-invasive samples from his study species. MHL and BG will then use these samples for a future collaborative project on the population genetics of sympatric species of langurs and macaques.

During the course, BG and participants from Sabah Parks (Mr Maklarin Hj. Lakin), Sabah Wildlife Department (Mr Abdul Karim Hj. Dakog and Mr Sailun Hj. Aris) and Sabah Forestry Department (Mr Pilis Malim) discussed the idea of establishing a wildlife non-invasive samples bank, based at ITBC, UMS. Such a resource would provide amazing opportunities for genetic studies on Sabah wildlife. Further discussions and meetings with the three governmental agencies and UMS will be organised to finalise the initiative.

The Kinabatangan Scientific Expedition 2002 was jointly organised by the Universiti Malaysia Sabah, Sabah Wildlife Department, Cardiff University (DARWIN), KOCP and the Japan International Cooperation Agency, and passed very smoothly.

Finally, during the expedition, Y.B Datuk Karim Bujang, Deputy Minister of Tourism, Environment, Science and Technology, visited Sukau village (Kinabatangan floodplain) and the Kinabatangan Orangutan Conservation Project research station, which was used as a base camp for the expedition. Results of the expedition were presented to the Deputy Minister and the opportunity was taken to promote the importance of conserving the Kinabatangan floodplain.

- Has the project been able to collaborate with similar projects in the host country or establish new links with / between local or international organisations involved in biodiversity conservation?

Our project has been able to collaborate with the ***Danish Cooperation for Environment and Development (DANCED) in Sabah. We created strong links with the Chief Technical Adviser, Mr Soren M. Jensen and the Human Resources Development Adviser, Mr Roger Cox. The latter is in charge of writing the management plan of the Lower Kinabatangan Wildlife Sanctuary, which will incorporate inputs from the genetic study on orangutans.***

We have also been able to establish links with Indonesian projects through the participation of two Indonesian students in the International Conservation Biology Course 2002. Mr Agung Daudi Seventri is a research assistant working for an orangutan conservation project based in Kalimantan and Ms Selly Sitha Sariningsih is a student working for the Sumatran Orangutan Conservation Programme based in Sumatra. Through the course and the expedition they have been able to share knowledge with the research assistants of the KOCP on orangutan and biodiversity conservation in their respective countries.

6. Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Are satisfactory exit strategies for the project in place?

During the International Conservation Biology Course 2002 Michael W. Bruford ran a Population and Habitat Viability Analysis for the Kinabatangan orangutans in which participants from Sabah governmental and non-governmental agencies and students showed great interest. We also organised one day during which several Sabah Wildlife Department officers presented talks about their activities for conserving biodiversity in Sabah. Four KOCP research assistants presented their work on orangutan conservation to the course participants during a seminar session.

During the Kinabatangan Scientific Expedition 2002, which was jointly organised by the Darwin project, the national television followed participants during their work and conducted interviews with participants. This will result in a three part television program about the expedition to be broadcast on Malaysian national television. The expedition was also covered by the national and regional press.

Satisfactory exit strategies are already in place: a management plan for the Kinabatangan Wildlife Sanctuary; the conservation biology course will continue after the Darwin completion; the population genetic methodology for other endangered rainforest species is established, and new projects are under development (Asian elephant, tambadau, Proboscis monkey, langurs); publications include three articles in preparation for peer-reviewed journals, and one book chapter (all in preparation).

7. Outputs, Outcomes and Dissemination

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions which accompanies the List of Standard Output Measures.

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Quantity	Description
3	1	Ms Sheena James (Malaysian) completed her BSc Degree and presented her research project: "Some social aspects of orangutan (*Pongo pygmaeus*) adaptation in a disturbed forest (study site at Sukau, Kinabatangan)"
4A	8	UMS students and staff (21), Sabah Park staff (1), Sabah Forestry Department staff (1), Sabah Wildlife Department staff (4), 2 Indonesian students (1 from Kalimantan, 1 from Sumatra), KOCP staff (4) attended the International Conservation Biology Course 2002 and attended the 3 weeks lectures and one week course assessment at UMS
4B	4	
4C	13	
4D	4	
GO's staff	6	
NGO's staff	6	
Total	33	
6A	1	UMS staff (Mr Mohammad Fairus Bin Jalil, Malaysian) has been trained by B. Goossens in the laboratory (DNA extraction, amplification and genotyping) at CU, for 6 months
6B	26	
6A	25	UMS students and staff (15), Sabah Park staff (1), Sabah Forestry Department (1), Sabah Wildlife Department (2), Indonesian students (2), KOCP staff (4) took part in the Kinabatangan Scientific Expedition 2002, and were trained in primates and crocodile census techniques, non-invasive genetic sampling, data collection for invertebrate, amphibian, reptile, bird and small mammal biodiversity studies, ethnobotanical surveys, and eco-tourism activities
6B	2	
7	1	International Conservation Biology Course 2002 CD has been provided to each student, including all lectures given during the course.

8	1	UK Darwin staff (Benoît Goossens, CU) spent 17 weeks (Feb 12-May 25, 2002) in Sabah for capacity building, training and teaching at the Universiti Malaysia Sabah. He was in charge of the organisation of the International Conservation Biology Course 2002, held at UMS, Sabah
8	2	UK scientists (Michael W. Bruford, CU and Lounès Chikhi, UCL) spent 3 weeks in Kota Kinabalu for teaching during the International Conservation Biology Course 2002, held at UMS, Sabah
8	1	UK scientist (Joanna M. Setchell, Surrey-Roehampton) spent 6 weeks in Kota Kinabalu and the Kinabatangan floodplain for teaching and field training during the International Conservation Biology Course 2002 and the Kinabatangan Scientific Expedition 2002
8	1	KOCP Director (Sabah), Marc Ancrenaz, spent 3 weeks in Kota Kinabalu and 2 weeks in Kinabatangan floodplain for teaching and field training during the International Conservation Biology Course 2002 and the Kinabatangan Scientific Expedition 2002
8	6	Sabah Wildlife Department staff (6 people including the Director) gave one day lectures during the International Conservation Biology Course 2002, held at UMS, Sabah
11B	2	1 paper in preparation for *Molecular Ecology* and 1 paper in preparation for *Folia Primatologica*
13A	9	Establishment of a collection of non-invasive samples from Asian elephant, Bornean orangutan, Proboscis monkey, long-tailed macaque, pig-tailed macaques, maroon langur, Hose's langur, silvered langur, Bornean gibbon at ITBC, UMS
14A	1	Darwin Initiative Workshop in University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia, presentation of a poster: "Non-invasive sampling of orang-utan hair and faeces in the Kinabatangan Wildlife Sanctuary, Sabah, Malaysia", Goossens B, Zulkifli A, Jalil MF, Lackman-Ancrenaz I, Ancrenaz M, Mohamed M, Andau P, Bruford MW (September 24, 2001)
14A	1	One-day seminar at the middle of the Kinabatangan Scientific Expedition 2002 organised by UMS, Cardiff University (Darwin Initiative), KOCP, SWD and JICA where preliminary results were presented to the Malaysian Deputy Minister of Tourism, Environment, Science and Technology, Y.B Datuk Karim Bujang
14B	1	Web page on the project on Biotype web site (Cardiff University) *http://www.cardiff.ac.uk/biosi/new/olbiotype/spring01/res.html#benoit*
14B	1	Talk (Benoît Goossens, CU), The Sabah Society, Kota Kinabalu, Sabah, Malaysia, 3rd of June 2002: *"Conservation of the orangutan in the Kinabatangan"*
15A	~5	Press articles in national and regional newspaper about the Kinabatangan Scientific Expedition 2002
19A	1	UK staff (BG) interviewed by the RTM (Radio Television Malaysia) during the Kinabatangan Scientific Expedition 2002
21	1	Setting up of a non-invasive genetic lab at ITBC, UMS

Table 2: Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	*Cost £*
Web page*	Tales from the Bornean jungle	Cardiff University, Biotype	http://www.cardiff.ac.uk/biosi/new/olbiotype/spring01/res.html#benoit	

- Provide details of dissemination activities in the host country during the year. Will these activities be continued by the host country when the project finishes, and how will this be funded and implemented?

September 24, 2001 — *Darwin Initiative Workshop in University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia, presentation of a poster: "Non-invasive sampling of orang-utan hair and faeces in the Kinabatangan Wildlife Sanctuary, Sabah, Malaysia", Goossens B, Zulkifli A, Jalil MF, Lackman-Ancrenaz I, Ancrenaz M, Mohamed M, Andau P, Bruford MW*

May 4-June 2, 2002 — *Kinabatangan Scientific Expedition 2002, co-organised by Cardiff University (Darwin Initiative), UMS, SWD and JICA was reported in the national press (Daily Express, Borneo Post, Sabah Times).*

As a result of the Kinabatangan Scientific Expedition 2002, an edited volume will be produced by Universiti Malaysia Sabah, Sabah Wildlife Department, Cardiff University (Darwin Initiative), KOCP and JICA.

8. Project Expenditure

- Please expand and complete Table 3.

Table 3: Project expenditure during the reporting period

Item	Budget	Expenditure
Total		

- Highlight any recently agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget

9. Monitoring, Evaluation and Lessons

- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what indicators of achievements (both qualitative and quantitative) and how are you measuring these?
- Are there lessons that you learned from this year work and can you build this learning into future plans?

10. Author(s) / Date

Prof Michael W. Bruford and Dr Benoît Goossens, 20th of June 2002